Coates Chapter 4 The Great American Faunal Interchange Reading Questions (S. David Webb is author)

1. Note that the first page of this reading is found at the tail end of the previous chapter that you read. I could have had the office staff redo this but instead I inconvenienced you! I then omitted a few pages after the first one, so don’t think that there are pages missing. I ommited those pages as I felt they were unnecessary for what I want you to get out of the reading.
2. Why did the formation of a land bridge in Central America have such a revolutionary impact?
3. Review from earlier reading: What was a partial cause of the Ice Age? (note that the other factor was regular fluctuations in Earth-Sun relations.) Roughly how many years ago did the Ice Age begin?
4. Why does this chapter, which covers the Great American Faunal Interchange, cover a much longer time period than the subsequent chapter of the book, which covers changes in terrestrial plant life?
5. I must say that this chapter, the first time I read it several years ago, and even now, amazes me! This is the kind of chapter that an 8 year old and an 80 year can find equally interesting. (I, by the way, am older than 8 but younger than 80)
6. To come up with dates of when the isthmus closed, in what three regions have the relevant studies sampled? In the US, what region has the best fossil data that have been used to come up with a fairly precise chronology?
7. How did Atlantic warm water mammals and invertebrates find their way to California?
8. From these fossils and other evidence of land animals, how long ago did the closure of the isthmus happen? (the fact that no matter where you find the evidence it points to the same time frame is an important point, giving credibility to the data and the contributing science. )
9. Where in South America is an excellent example of fossils that had first appeared there 2.4 million years ago as recent migrants from North America?
10. For what reason is the example of immigrant mammals in Australia given here? What were the mammals that were introduced there?
11. What type of animals provide high quality and abundant fossil evidence? What body part of is often used to identify what they were, all the way to individual species? (p. 104)
12. There were no llamas living in North or Central America at the time of Columbus or in fact anytime since human occupation of the Americas at least 13,500 years ago. So from the reading then, where were llamas first, where did they then go when the Interchange began, and what happened to them on their original American continent? (quite a story! – page 102 if you’re lost)
13. Based on the types of most animals that crossed the land bridge in Panama, it can be inferred that much of the vegetation at the time of crossing in Central America was what? (describe in some detail – and be sure to read pp. 104 & 106 for this)
14. Six families of carnivores entered South America from North American during the Interchange. What was their effect on the resident original herbivore populations in South America? Explain why.
15. Describe the geography and characteristics of what is considered to probably be a second phase of the interchange.
16. So from this second phase, the dominant faunal characteristics went from \_\_\_\_\_\_\_\_\_ American temperate to \_\_\_\_\_\_\_\_\_ American tropical. What is the maximum extent northward of this fauna?
17. Give three animals that were part of this second phase of migration.
18. This second phase of the interchange notably did not include pronghorn antelopes, mammoths, and the American bison. Explain why they didn’t make it into South America. (don’t just say they were too late…but explain why they couldn’t make it farther south)
19. What is the furthest south bison made it into Central America (at least as is cited in the chapter)
20. The first full paragraph on page 108 is incredibly important in explaining what animals were more successful in the post Great American Faunal Interchange, and which ones were less successful. (in other words, why were the ones migrating out of North America more successful after arrival than ones migrating out of South America?) What is the basic explanation? (Success is defined as surviving, dispersing widely and undergoing evolutionary diversification)
21. What do you think of the picture of Eremotherium? (Or maybe you prefer Titanus?)
22. What did Titanus eat? What did Eremotherium eat? Who would you be more afraid of?
23. What predator killed Holmesina, and what evidence do we have of this?
24. The remains of what South American migrant was thought to be a dinosaur when first uncovered in Florida?
25. Pre-exchange, who were the major land predators in South America, and who were the major aquatic predators?
26. Where did deer originate? When, where, and how did they cross into their “new world”?
27. What relatively new genus of deer originated in Central America?
28. After migrating to South American in the interchange, where deer able to evolve and diversify there?
29. Which continent in the world today has the most kinds of deer?
30. How many species of mice were in South America before the Interchange?
31. What is the leading explanation for how so many species and genera of mice now live in South America?
32. What share of South American and Central American land animal genera are descendants of the Interchange?
33. What is the geohistory of horses in the Americas? Llamas?
34. What are the two probable explanations for the mass extinctions in the Americas around 11,000 years ago?
35. In which latitudes, temperate or tropical, were mass extinctions worse? Which of the two explanations above does this fit best with, according to the author? (your instructor takes no position on this debate!) (page 121)
36. During the second half of the Pleistocene, the isthmian landscape was more dominated by tropical rainforest. What were the different effects of this on buffalo and mammoth (grazing animals from the north), and tropical biota from the south?
37. Summarize the last paragraph of the chapter (similar to an earlier question)